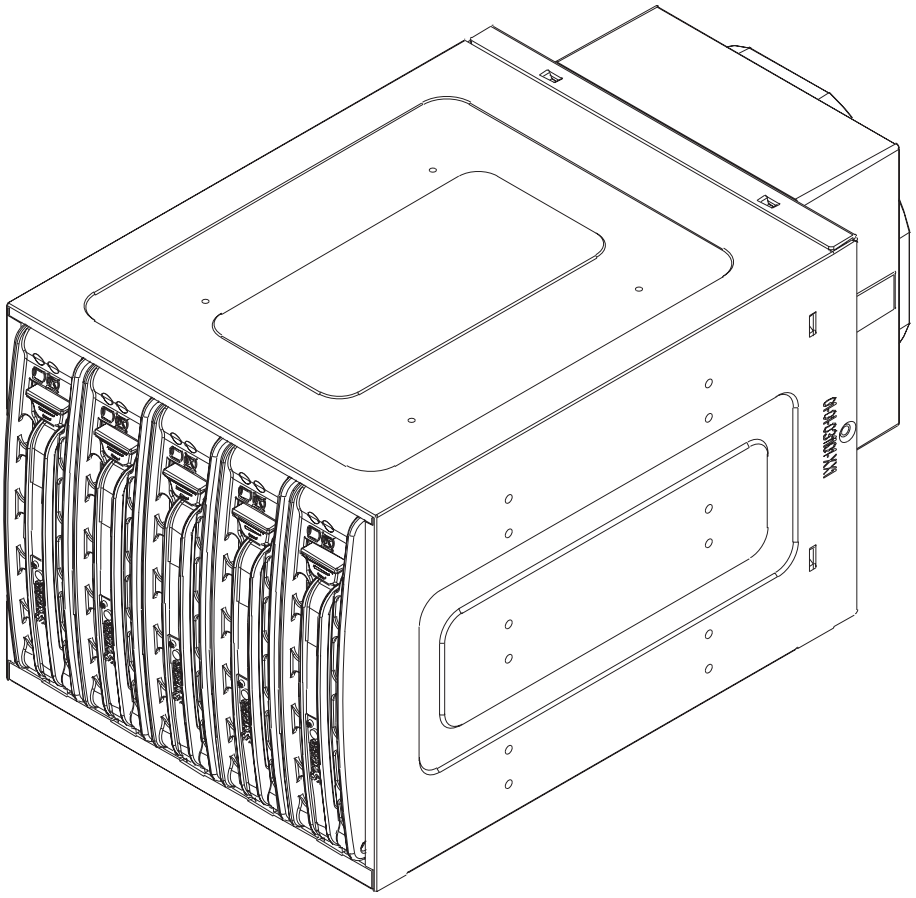
SUPER®



SAS M35TQ Mobile Rack

USER'S GUIDE

Rev. 1.0b

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software, if any, and documentation may not, in whole or in part, be copied, photocopied, reproduced, translated or reduced to any medium or machine without prior written consent.

IN NO EVENT WILL SUPERMICRO BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPERMICRO SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Super Micro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Manual Revision 1.0b
Release Date: April 23, 2008

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document.

Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Copyright © 2008 by Super Micro Computer, Inc.
All rights reserved.
Printed in the United States of America

Table of Contents

SAS M35TQ Mobile Rack

Contacting SuperMicro iv

Returning Merchandise for Service v

Chapter 1: Safety Guidelines

1-1 ESD Safety Guidelines 1-1

1-2 General Safety Guidelines 1-1

1-3 An Important Note to Users 1-1

Chapter 2: Jumpers Settings and Pin Definitions

2-1 Front Connectors and Jumpers 2-1

Front Connectors 2-1

2-2 Front Connector and Pin Definitions 2-2

2-3 Front Jumper Locations and Pin Definitions 2-4

Explanation of Jumpers 2-4

Fan Jumper Settings 2-5

I^2C and SGPIO Modes and Jumper Settings 2-6

SAS Port Connections in I^2C and SGPIO Settings 2-7

SAS Port Connections in I^2C and SGPIO Settings 2-7

2-4 Rear Connectors and LED Indicators 2-8

Chapter 3: Installation Procedures

3-1 Tools Needed 3-1

3-2 Important Safety Guidelines 3-1

Before accessing the Mobile Rack: 3-1

3-3 Installation Procedures 3-2

Mobile Rack Hard Drives 3-2

To remove a hard drive tray from the mobile rack: 3-2

To install a hard drive to the hard drive tray: 3-3

Connecting Cables to the Mobile Rack 3-5

To connect SAS/SATA and power cables the mobile rack: 3-5

Additional Installation Information 3-8

Contacting SuperMicro

Headquarters

Address:	SuperMicro Computer, Inc.
	980 Rock Ave.
	San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information)
	support@supermicro.com (Technical Support)
Web Site:	www.supermicro.com

Europe

Address:	SuperMicro Computer B.V.
	Het Sterrenbeeld 28, 5215 ML
	's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)

Asia-Pacific

Address:	SuperMicro, Taiwan
	4F, No. 232-1, Liancheng Rd.
	Chung-Ho 235, Taipei County
	Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	886-2-8228-1366, ext.132 or 139

Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

Whenever possible, repack the mobile rack in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the mobile rack securely, using packaging material to surround the mobile rack so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 1:

Safety Guidelines

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

1-1 ESD Safety Guidelines

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the RAID card by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the card and peripherals back into their antistatic bags when not in use.

1-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the mobile rack.
- Disconnect the power cable before installing or removing any cables from the mobile rack.
- Make sure that the mobile rack is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

1-3 An Important Note to Users

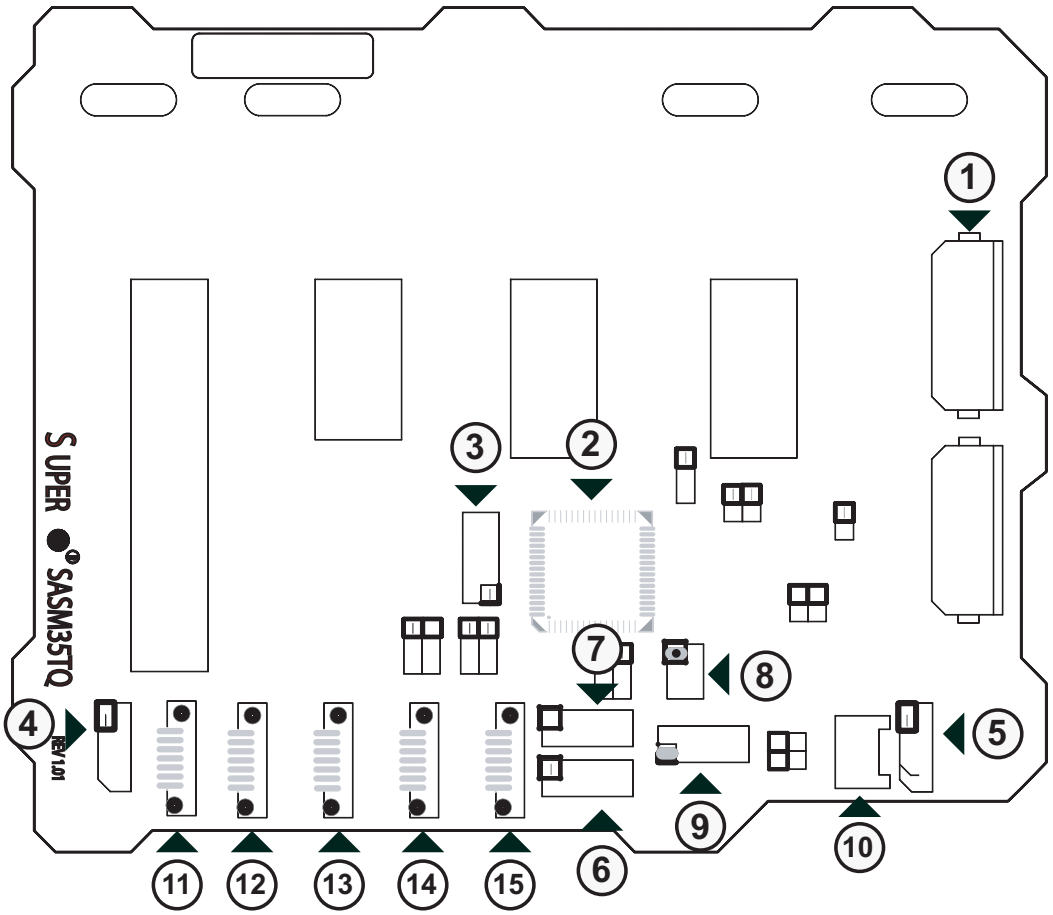
- All images and layouts shown in this user's guide are based upon the latest PCB Revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

Notes

Chapter 2:

Jumpers Settings and Pin Definitions

2-1 Front Connectors and Jumpers



Front Connectors

1. Power Connectors (4-pin): JP10 and JP13
2. Chip: MG 9072
3. JTAG JP47
4. I^2C Connector #1 JP44
5. I^2C Connector#2 JP45
6. SideBand Connector #1 JP51
7. SideBand Connector #2 JP52
8. Upgrade JP46
9. ACT IN JP26
10. FAN Connector JP22
11. SAS Port #0 J5
12. SAS Port #1 J6
13. SAS Port #2 J7
14. SAS Port #3 J8
15. SAS Port #4 J10

2-2 Front Connector and Pin Definitions

1. Mobile rack Main Power Connectors

The 4-pin connectors, designated JP10 and JP13, provide power to the mobile rack. See the table on the right for pin definitions.

Mobile rack Main Power 4-Pin Connector (JP10 and JP13)

Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

2. MG9072 Chip

The MG9072 is an enclosure management chip that supports the SES-2 controller and SES-2 protocols.

3. JTAG Connector

The JTAG connector, designated JP47, is used for diagnostic purposes only. This connector should only be used a certified and experienced technician.

4. and 5. I²C Connectors

The I²C Connectors, designated JP44 and JP45, are used to monitor HDD activity and status. See the table on the right for pin definitions.

I²C Connector Pin Definitions (JP44 and JP45)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

6 and 7. Sideband Headers

The sideband headers are designated JP51 and JP52. For SES-2 to work properly, you must connect an 8-pin sideband cable. See the table to the right for pin definitions.

Sideband Headers (JP51 and JP52)

Pin #	Definition	Pin #	Definition
2	Mobile rack Addressing (SB5)	1	Controller ID (SB6)
4	Reset (SB4)	3	GND (SB2)
6	GND (SB3)	5	SDA (SB1)
8	Mobile rack ID (SB7)	7	SCL (SB0)
10	No Connection	9	No Connection

8. Upgrade Connector

The Upgrade connector, designated JP46, is used for diagnostic purposes only. This connector should only be accessed by a certified and experienced technician.

9. Activity LED Header

The activity LED header, designated JP26, is used to indicate the activity status of each SAS drive. For the Activity LED Header to work properly, connect using a 10-pin LED cable.

SAS Activity LED Header Pin Definitions (JP26)

Pin #	Definition	Pin #	Definition
1	ACT IN#0	6	ACT IN#4
2	ACT IN#1	7	ACT IN#5
3	ACT IN#2	8	ACT IN#6
4	ACT IN#3	9	ACT IN#7
5	Ground	10	Empty

10. Fan Connector

The 3-pin connectors, designated JP22, provide power to the mobile rack fan. See the table on the right for pin definitions.

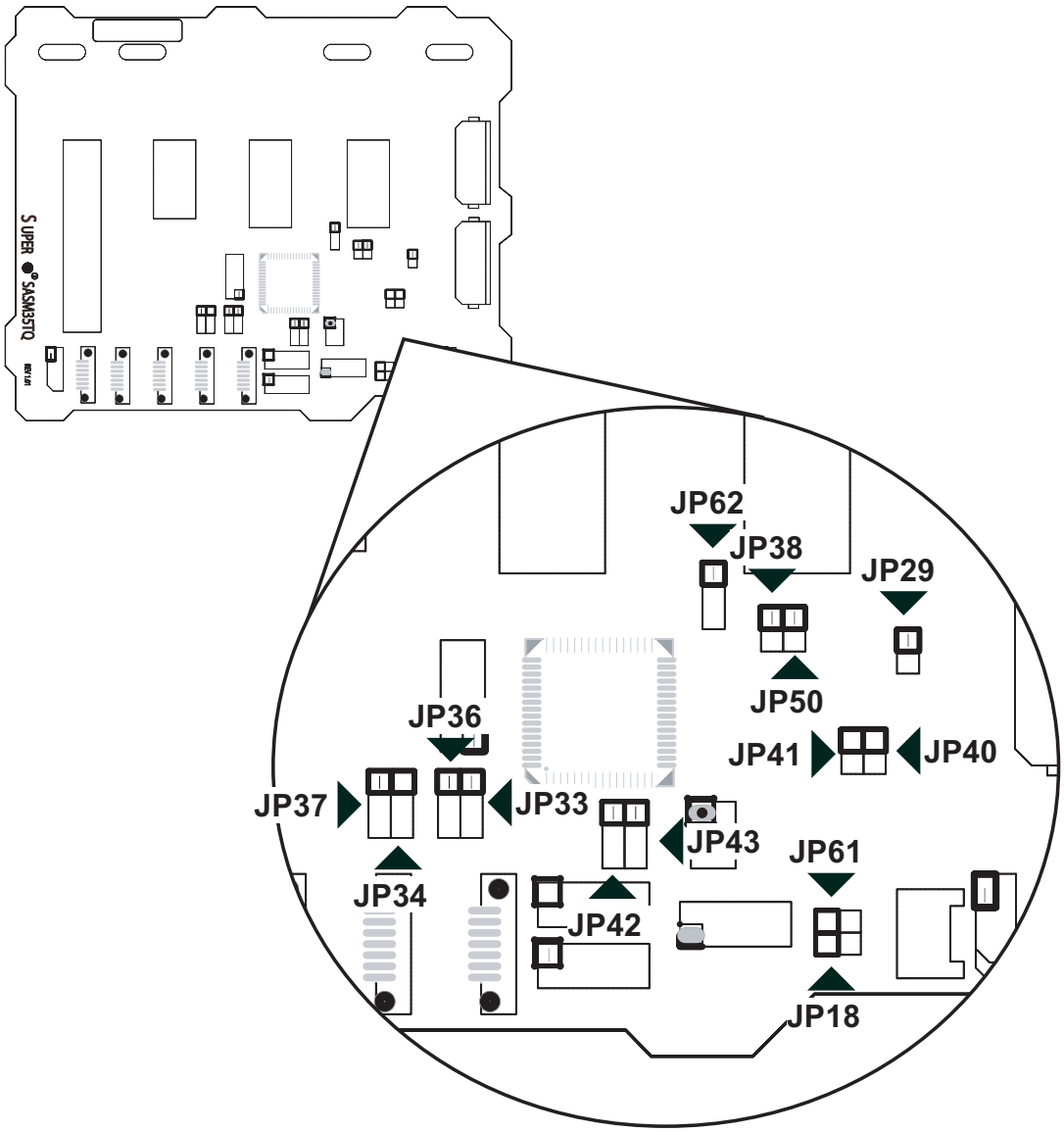
Fan Connectors (JP22)

Pin#	Definition
1	Ground
2	+12V
3	Tachometer

11 - 15. SAS Ports

The SAS ports are used to connect the SAS drive cables. The 5 ports are designated #0 - #4. Each port is also compatible with SATA drives.

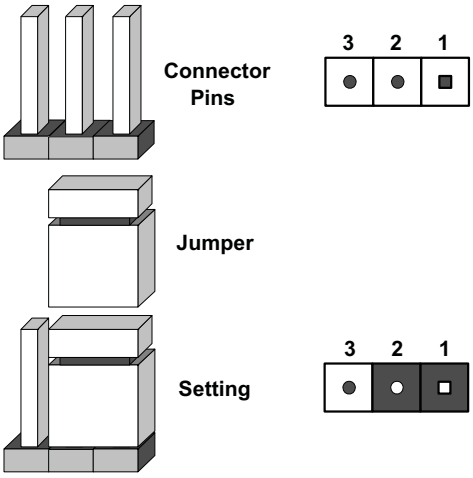
2-3 Front Jumper Locations and Pin Definitions



Explanation of Jumpers

To modify the operation of the mobile rack, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board.

Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP18	Open: Enabled Closed: Disabled	Buzzer Reset
JP29	Open: Default Closed: Reset	9072 Chip Reset

Fan Jumper Settings

This mobile rack can use up to four fans. To utilize each fan, you must configure **both jumpers** as instructed below.

Fan Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP61	Closed: With Fan Open: No Fan	FAN#1
JP62	1-2:With Fan 2-3:No Fan	FAN#1

I²C and SGPIO Modes and Jumper Settings

This mobile rack can utilize I²C or SGPIO. I²C is the default mode and can be used without making changes to your jumpers. The following information details which jumpers must be configured to use SGPIO mode or restore your mobile rack to I²C mode.

I²C Setting (Default)		
Jumper	**Jumper Setting**	**Note**
JP33	2-3	Controller ID #1
JP34	1-2:ID#0	Backplane ID #1
JP36	2-3	Controller ID #2
JP37	2-3:ID#1	Backplane ID #2
JP38	Closed	I²C Reset #2
JP40	Open	I²C Reset SDOUT #1
JP41	Open	I²C Reset SDOUT #2
JP42	2-3	Backplane ID SDIN #1
JP43	2-3	Backplane ID SDIN #2
JP50	Closed	I²C Reset #1

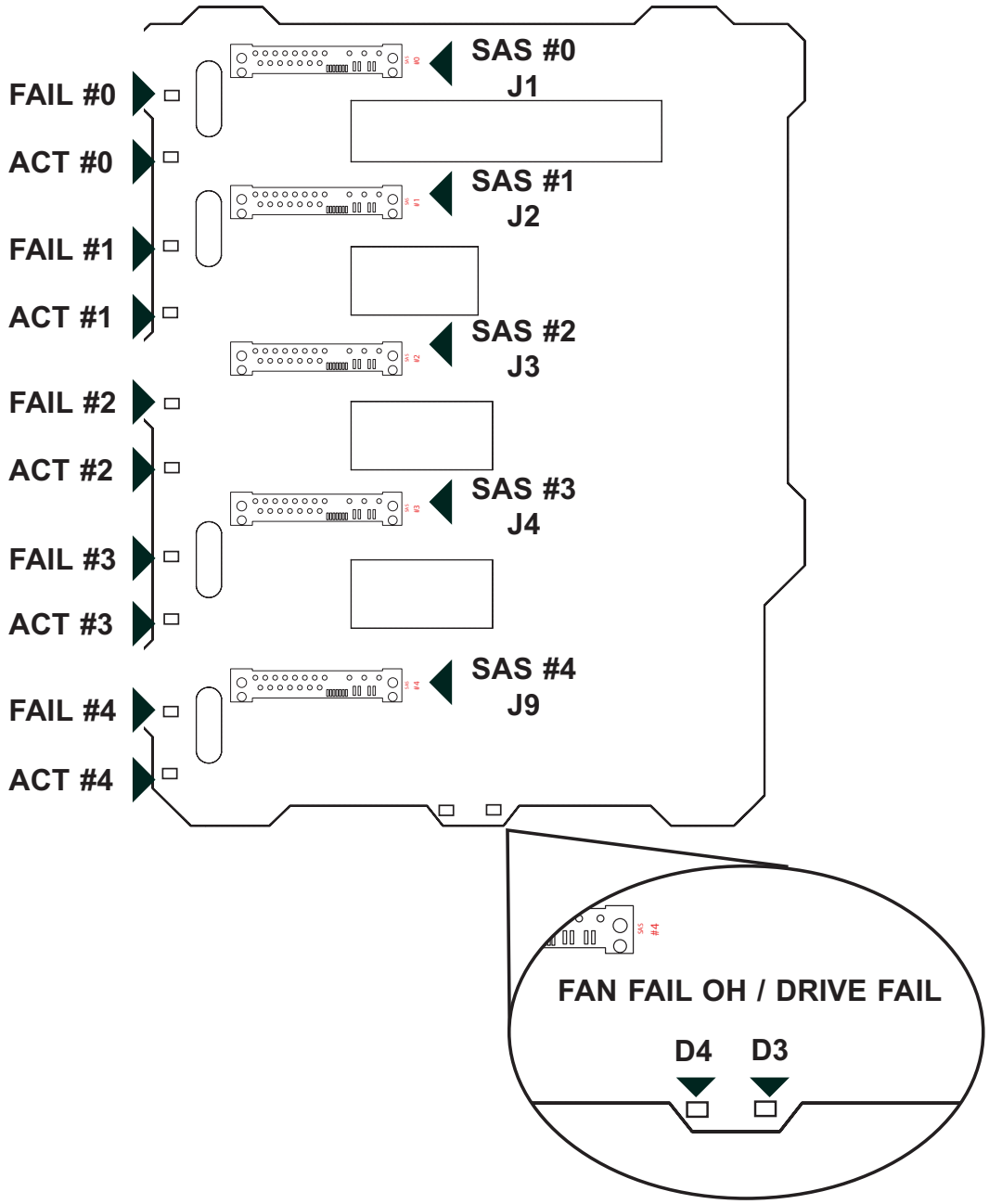
SGPIO Setting		
Jumper	**Jumper Setting**	**Note**
JP33	1-2	Controller ID #1
JP34	1-2:ID#0	Backplane ID #1
JP36	1-2	Controller ID #2
JP37	1-2:ID#0	Backplane ID #2
JP38	Open	I²C Reset #2
JP40	Closed	I²C Reset SDOUT #1
JP41	Closed	I²C Reset SDOUT #2
JP42	1-2	Blackplane ID SDIN #1
JP43	1-2	Blackplane ID SDIN #2
JP50	Open	I²C Reset #1

SAS Port Connections in I²C and SGPIO Settings

Use the following chart when connecting this mobile rack. If you connect the SAS ports out of order, you will not able to easily identify drives using the LED function.

SAS Port Connections in I²C and SGPIO Settings		
Port #	**I²C**	**SGPIO**
0 - 3	I²C #1	Sideband #1
4	I²C #2	Sideband #2

2-4 Rear Connectors and LED Indicators



Rear SAS/SATA Connectors	
Rear Connector	**SAS Drive Number**
SAS #0	SAS/SATA HHD #0
SAS #1	SAS/SATA HHD #1
SAS #2	SAS/SATA HHD #2
SAS #3	SAS/SATA HHD #3
SAS #4	SAS/SATA HHD #4

Rear LED Indicators		
Rear LED	**Hard Drive Activity**	**Failure LED**
SAS #0	D12	D5
SAS #1	D13	D6
SAS #2	D14	D7
SAS #3	D15	D8
SAS #4	D18	D19

Mobile Rack Backplane LEDs		
LED	**Hard Drive Activity**	**Failure LED**
D3	ON	Overheat/Drive Failure LED Indicator (Red light: flashing, Buzzer: On)
D4	ON	Overheat/Drive Failure LED Indicator (Red light: flashing, Buzzer: On)

Notes

Chapter 3:

Installation Procedures

3-1 Tools Needed

The following tools are neeed for the installation of the mobile rack into the chassis:

- Phillips head screwdriver
- Antistatic Strap (recommended)

3-2 Important Safety Guidelines

This product should be assembled and/or serviced by qualified and experienced technicians. To avoid personal injury and property damage, carefully follow the guidelines listed below.

Before accessing the Mobile Rack:

1. Turn off all peripheral devices and the power supply connected to the chassis and unplug all power cords from the system or the wall outlets.
2. Disconnect all the cables and label the cables for easy identification.
3. Use a grounded wrist strap designed to prevent static discharge when handling components.
4. Save all the screws and fasteners for later use. (If necessary, label these screws or fasteners for easy identification.)
5. Follow the instructions given in the following section to remove and install the cooling fan, hard disks and the rear window.

3-3 Installation Procedures

Use the following installation procedures to set up the Mobile Rack.

For the SAS-M35TQ:

1. SAS IDs are assigned automatically by the backplane. Do not set ID's manually on the drives.

2. SAS termination is enabled by default on the SAS backplane.

Mobile Rack Hard Drives

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

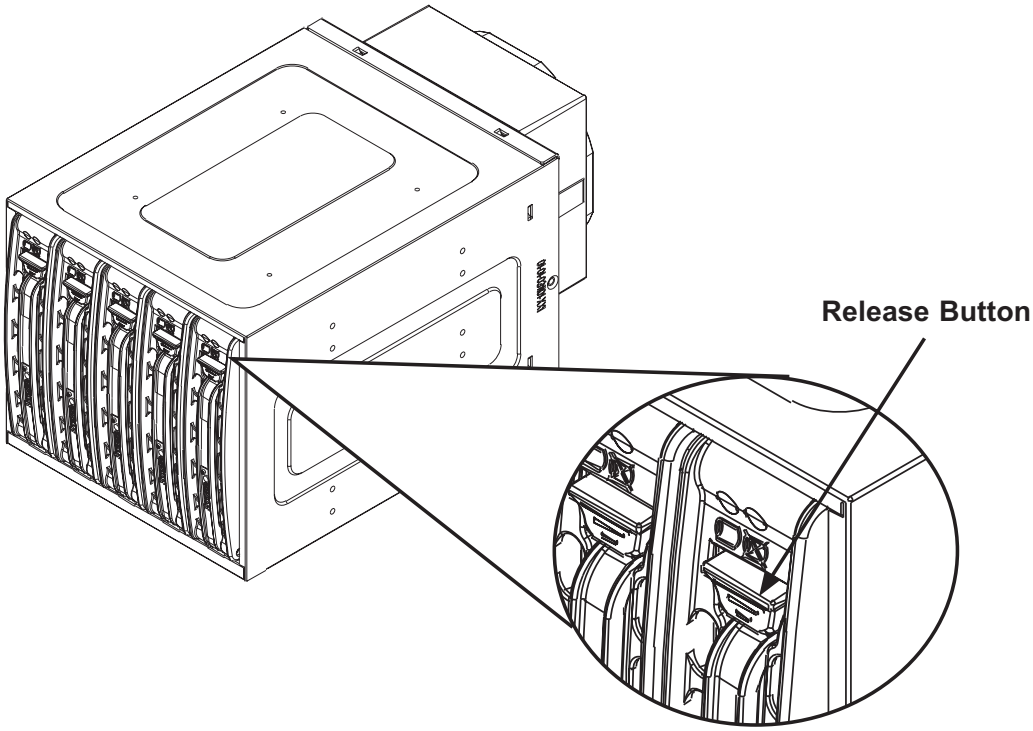


Figure 3-1: Chassis Drive Tray

To remove a hard drive tray from the mobile rack:

1. Push the release button located beside the drive LED's.

2. Swing the handle outward and pull out the unit.

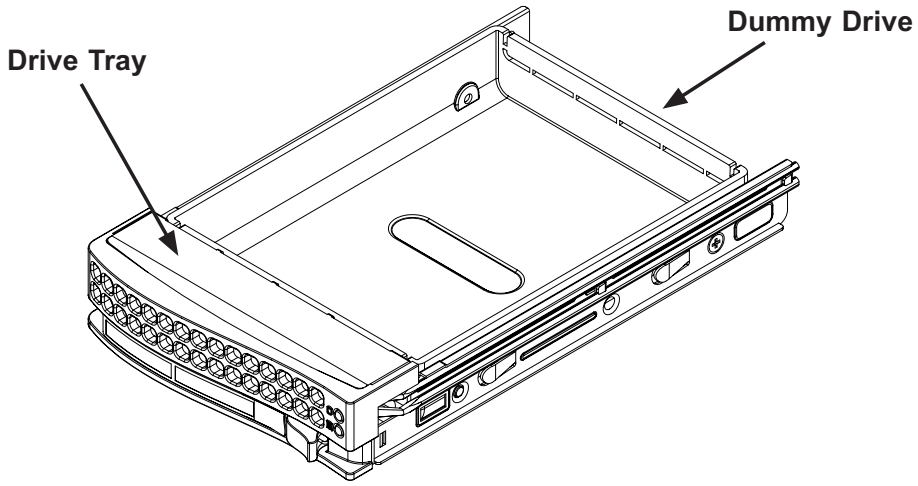


Figure 3-2: Chassis Drive Tray

Warning: Except for short periods of time (swapping hard drives), do not operate the server with the hard drives empty. The hard drive tray must have a hard drive or dummy drive installed.

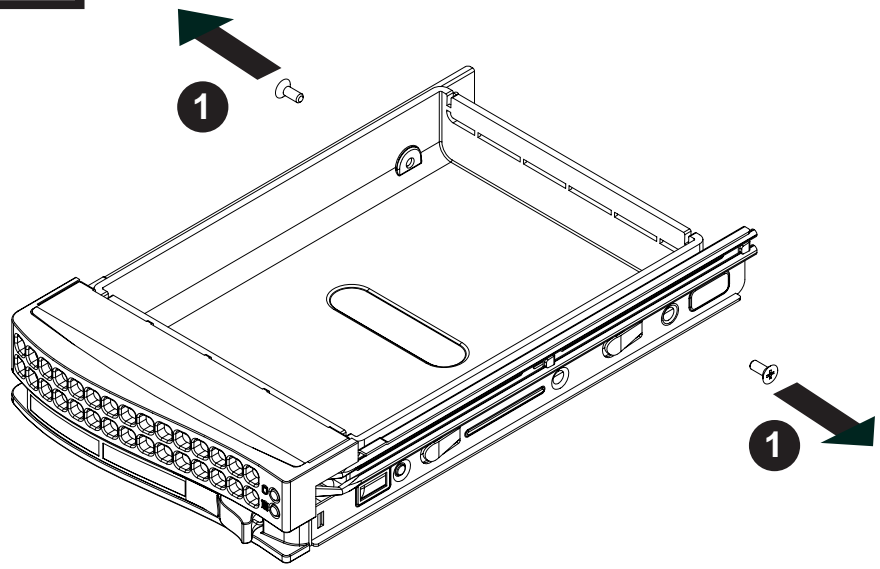


Figure 3-3: Removing Dummy Drive from Tray

To install a hard drive to the hard drive tray:

1. Remove the two screws holding connecting the drive tray the carrier.

2. Remove the tray from the carrier.

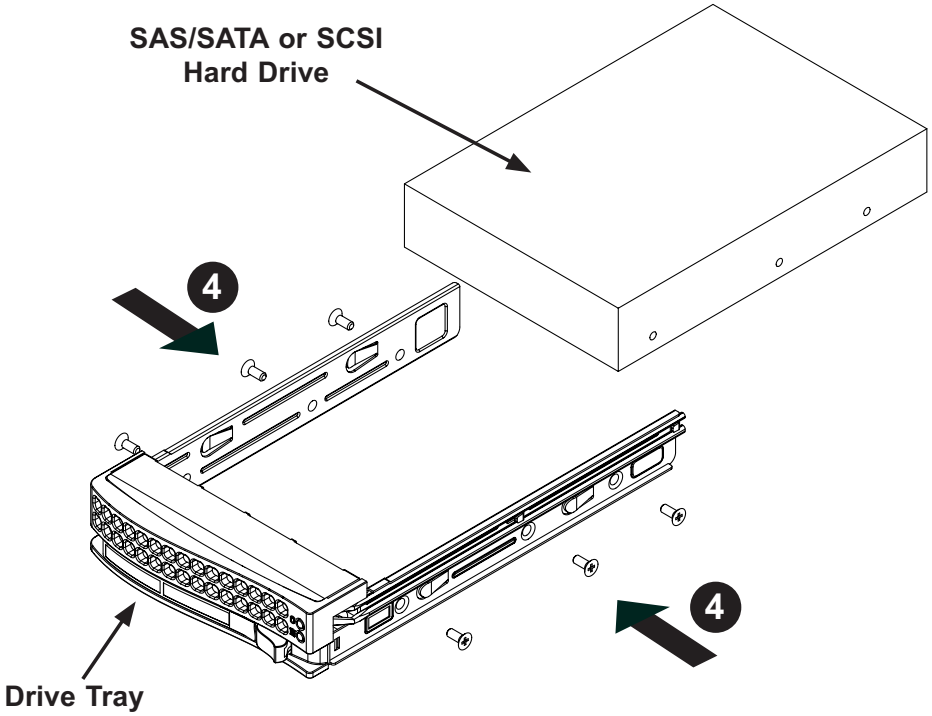


Figure 3-4: Removing Hard Drive

3. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

4. Secure the hard drive by tightening all six screws.

5. Replace the drive tray into the mobile rack. Make sure the close the drive tray handle.

6. Repeat these steps for each hard drive you want to install.

Connecting Cables to the Mobile Rack

Before connecting cables the mobile rack, you must remove the exhaust fan. In some circumstances, the backplane may need to be removed.

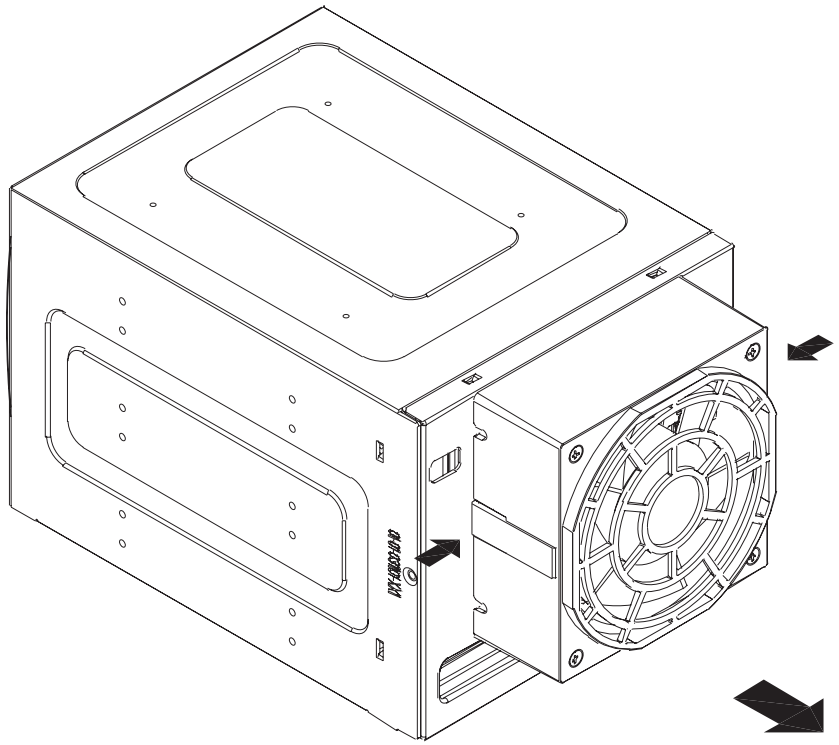


Figure 3-5: Removing Mobile Rack Fan

To connect SAS/SATA and power cables the mobile rack:

1. Before connecting the mobile rack, you must remove exhaust fan. To do this, pinch the tabs on each side of the unit (as illustrated).

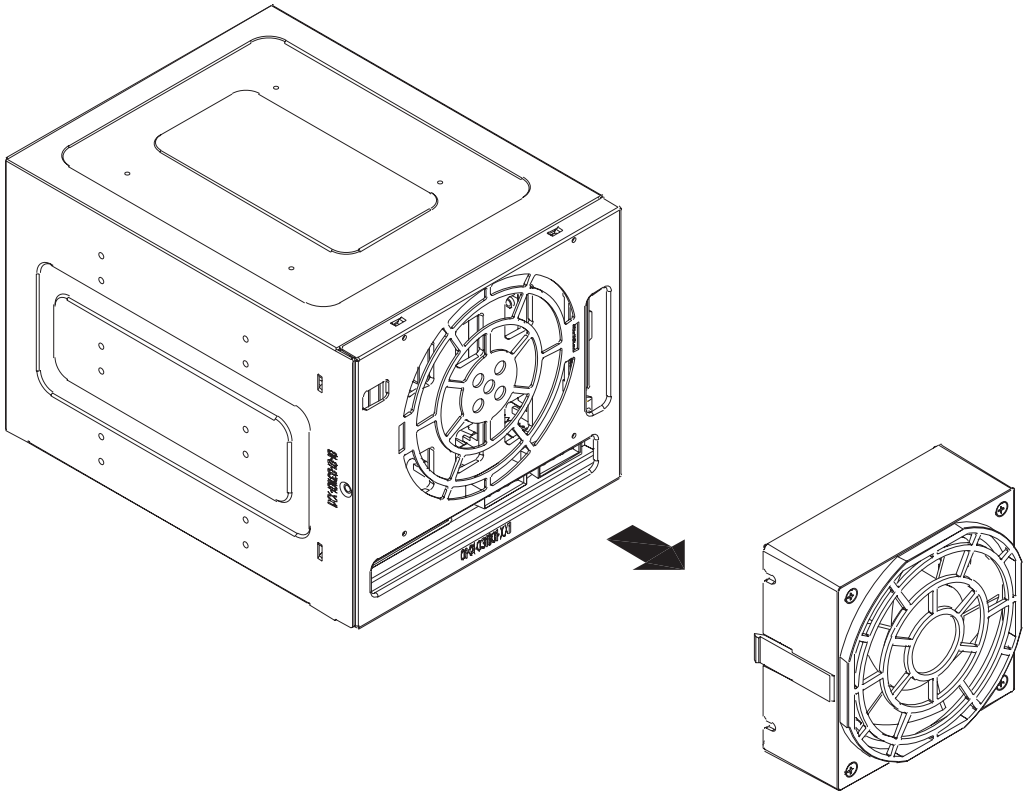


Figure 3-6: Removing Mobile Rack Fan

2. Pull the exhaust fan from the chassis.

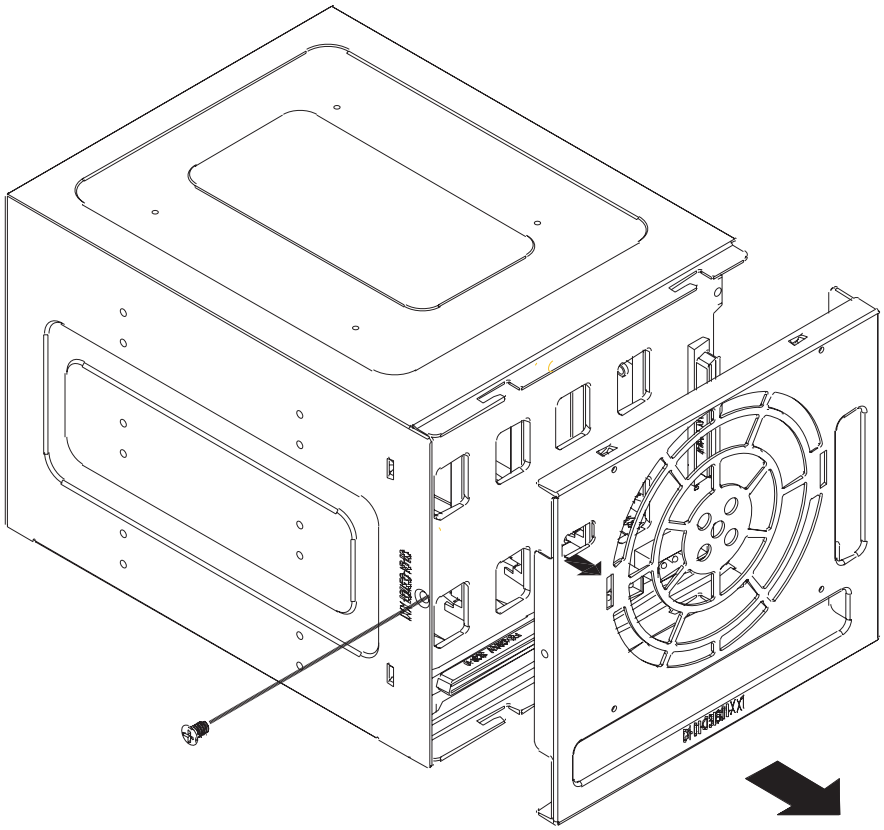


Figure 3-7: Removing Mobile Rack Fan

3. Remove the bracket screw and pull the bracket from the mobile rack.

4. Connect the SAS cables and power cables to the mobile rack backplane.

5. Replace the bracket, bracket screw, and fan to the mobile rack.

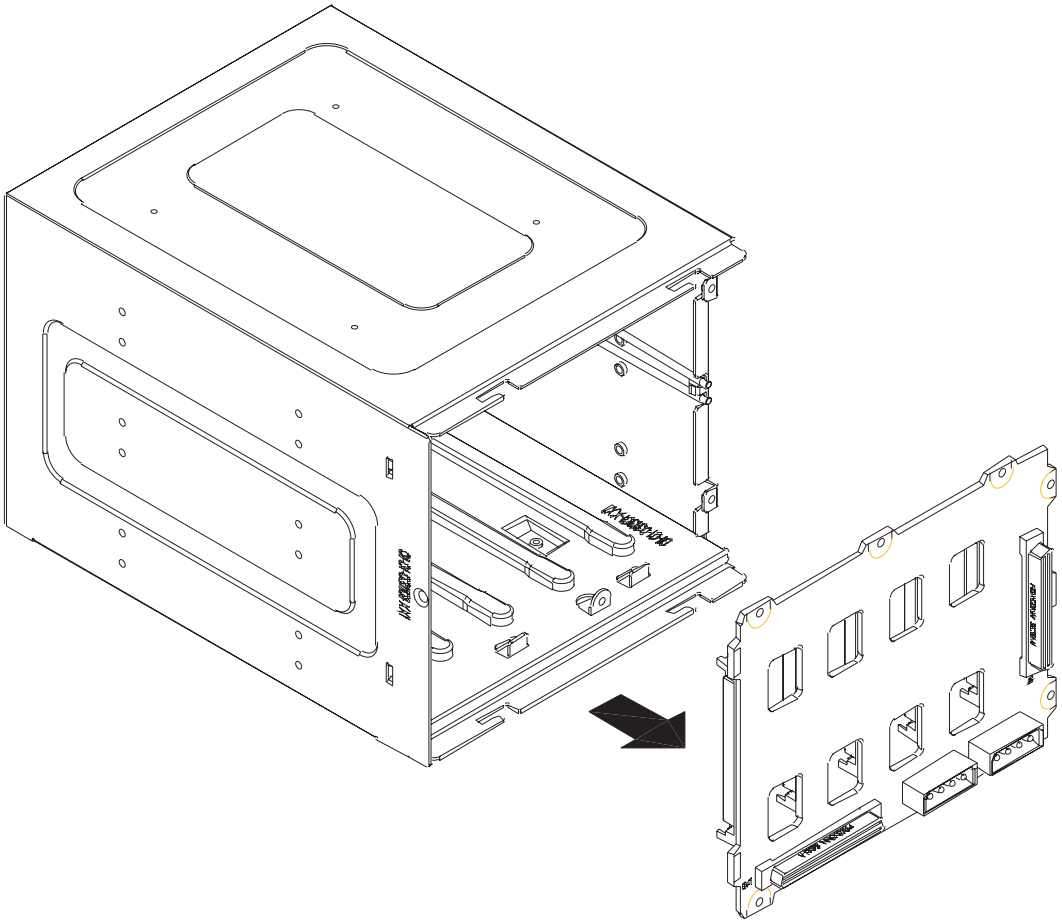


Figure 3-8: Removing Mobile Rack Fan

Additional Installation Information

The backplane may be separated from the mobile rack by removing the seven screws holding the backplane in place.